

Vit	synonym	Functions	Deficiency
B5	Pantothenic acid	Enters in synthesis of: 1- Fatty acid synthase (acyl carrier protein (ACP)) in 2- CoA-SH  It acts as a lipotropic factor	-----
B7	Biotin	CO <sub>2</sub> -carrier in carboxylation reactions : a) Pyruvate carboxylase b) Acetyl-CoA carboxylase c) Propionyl CoA carboxylase	Raw eggs; uncooked egg white contains a heat labile protein (avidin) which can combine with biotin, preventing its absorption and producing biotin deficiency.
C	L-ascorbic acid	1. A cofactor in many hydroxylation reactions for synthesis of collagen, corticosteroid, Bile acids, and catecholamines 2. It reduces Fe <sup>3+</sup> to Fe <sup>2+</sup> → absorption of iron. 3. antioxidant → ↓ some chronic diseases 4. Moderate cold by: ↑ phagocytosis of virus or bacteria, ↑ Ig synthesis, ↓ histamine.	[A] Defective collagen: Delayed wound healing, loose teeth & bleeding gum, Osteoporosis, and easy bruising. [B] Microcytic hypochromic anemia due to chronic blood loss & defective iron absorption.
E	Tocopherol	Vitamin E is the most widely distributed antioxidant in nature	1- Hemolytic anemia in premature infants 2- Nerve and muscle membrane damage.
B1 5 B1 6	Pangamic acid Dimethylglycine	denote methyl group → could be used in: Detoxification, cancer, asthma, and autism	Possible mutagens especially if mixed with nitrite (food additive) (Still under research)

- **Oxidative decarboxylation of α- keto acids** forms a three-member family e.g. pyruvate dehydrogenase, α-Ketoglutarate dehydrogenase, branched-chain α-keto acid dehydrogenase
- Vitamins Acts as coenzymes for oxidative decarboxylation
  - a) Thiamine (B1)      TPP
  - b) Riboflavin (B2)      FAD
  - c) Niacin (B3)      NAD<sup>+</sup>
  - d) Pantothenic acid (B5)      CoASH
  - e) Lipoic acid
- Antioxidant vitamins (vitamins C, E, and β-carotene)